

Injury Surveillance Systems: The Importance of Data Integration

Emergency Medical Services Component



Maryland Traffic Records Forum

June 16, 2015, 1:00 – 2:00

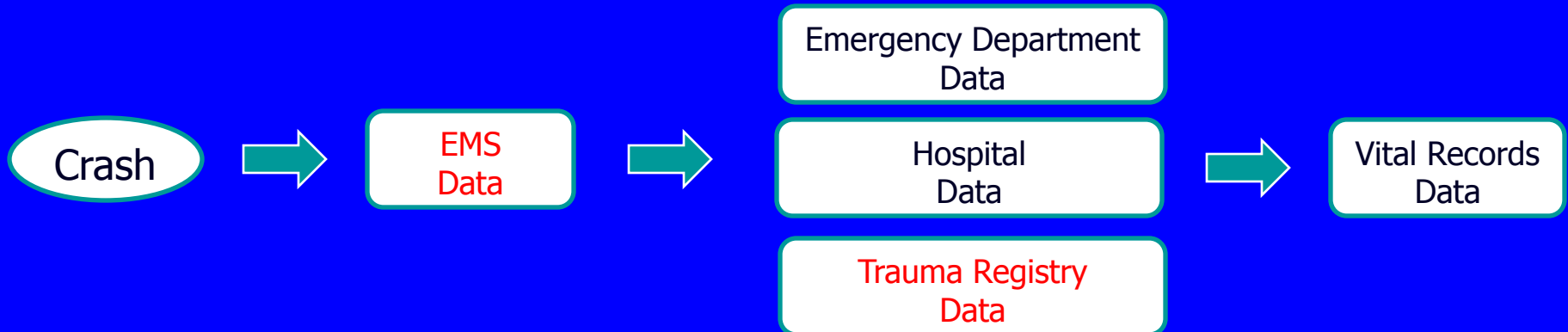
Concurrent Session 2C

Room A303 - Maritime Institute

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Injury Surveillance System (ISS)

- Provides Supplementary Crash Information through:
 - frequency, severity, nature of injuries
 - enables **integration** of data
 - permits accessibility of data



Maryland ISS Data Sets

- **EMS** - electronic Maryland Emergency medical services Data System (**eMEDS**)
- **ED and Hospital** - Health Services Cost Revue Commission (**HSCRC**)
- **Trauma Registry** - Maryland Trauma Registry (**MTR**)
- **Vital Records** - Death Certificate and Multiple Cause of Death files

EMS
First

Data
Source

MAIS
Runsheets

1984-2004

MARYLAND AMBULANCE INFORMATION SYSTEM (Rev. 07/93)

Station Run Number: _____ Jurisd Incident Number: _____ Supl: _____ Box Number: _____ District: _____ Receiving Facility: _____
Other Units on Scene: _____

Response Location: _____ Zip Code: _____ Inc Type: _____ Occup: _____ Action: _____ Disp: _____

Patient Name: _____ Provider 1 ID Number: _____ Provider 1 Name: _____
Parent/Guardian: _____ Provider 2 ID Number: _____ Provider 2 Name: _____
Patient Address: _____ Provider 3 ID Number: _____ Provider 3 Name: _____
Home Phone: _____

DATE Month: _____ Day: _____ YR: _____
10509687

DOCUMENTATION OF TIMES

911 Call	Amb Call	Dpt Sta	Arv Loc	Dpt Loc	Arv Hosp	Rtn Serv	Cty	Unit	High Staff	NO CARE RENDERED	PT. AGE
(0) (0) (0)	(0) (0) (0)	(0) (0) (0)	(0) (0) (0)	(0) (0) (0)	(0) (0) (0)	(0) (0) (0)	(0) (0) (0)	(0) (0) (0)	(0) (0) (0)	(0) (0) (0)	(0) (0) (0)
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(5) (5) (5)	(5) (5) (5)	(5) (5) (5)	(5) (5) (5)	(5) (5) (5)	(5) (5) (5)	(5) (5) (5)	(5) (5) (5)	(5) (5) (5)	(5) (5) (5)	(5) (5) (5)	(5) (5) (5)
(6) (6) (6)	(6) (6) (6)	(6) (6) (6)	(6) (6) (6)	(6) (6) (6)	(6) (6) (6)	(6) (6) (6)	(6) (6) (6)	(6) (6) (6)	(6) (6) (6)	(6) (6) (6)	(6) (6) (6)
(7) (7) (7)	(7) (7) (7)	(7) (7) (7)	(7) (7) (7)	(7) (7) (7)	(7) (7) (7)	(7) (7) (7)	(7) (7) (7)	(7) (7) (7)	(7) (7) (7)	(7) (7) (7)	(7) (7) (7)
(8) (8) (8)	(8) (8) (8)	(8) (8) (8)	(8) (8) (8)	(8) (8) (8)	(8) (8) (8)	(8) (8) (8)	(8) (8) (8)	(8) (8) (8)	(8) (8) (8)	(8) (8) (8)	(8) (8) (8)
(9) (9) (9)	(9) (9) (9)	(9) (9) (9)	(9) (9) (9)	(9) (9) (9)	(9) (9) (9)	(9) (9) (9)	(9) (9) (9)	(9) (9) (9)	(9) (9) (9)	(9) (9) (9)	(9) (9) (9)

RESPONSE IDENTIFICATION

RACE: Hispanic or Latino? ☐ Mark all that apply: ☐ American Indian or Alaska Native ☐ Asian ☐ Black or African American ☐ White ☐ Native Hawaiian or Other Pacific Islander

FIRST VITALS

SYS	DIA	PUL	RES
(0) (0) (0)	(0) (0) (0)	(0) (0) (0)	(0) (0) (0)
(1) (1) (1)	(1) (1) (1)	(1) (1) (1)	(1) (1) (1)
(2) (2) (2)	(2) (2) (2)	(2) (2) (2)	(2) (2) (2)
(3) (3) (3)	(3) (3) (3)	(3) (3) (3)	(3) (3) (3)
(4) (4) (4)	(4) (4) (4)	(4) (4) (4)	(4) (4) (4)
(5) (5) (5)	(5) (5) (5)	(5) (5) (5)	(5) (5) (5)
(6) (6) (6)	(6) (6) (6)	(6) (6) (6)	(6) (6) (6)
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(8) (8) (8)	(8) (8) (8)	(8) (8) (8)	(8) (8) (8)
(9) (9) (9)	(9) (9) (9)	(9) (9) (9)	(9) (9) (9)

SIGNS/SYMBOLS

Agitated ☐ Airway Obs ☐ Cyanotic ☐ Dehydrated ☐ Diaphoretic ☐ Hemorrhage ☐ Hypothermic ☐ Laceration ☐ Nausea ☐ Pain ☐ Head ☐ Neck ☐ Back ☐ Paralysis ☐ Pupils ☐ Resp Distrs ☐ Syncope ☐ Vomiting ☐ Weakness ☐ Other ☐

INJURY TYPE

ATV Crash ☐ Beating ☐ Bike ☐ Burn ☐ Drowning ☐ Fall ☐ Farm ☐ GSW ☐ Industrial ☐ Lawn Mwr ☐ Motorcycle ☐ M V Crash ☐ Pedestrian ☐ Sport/Rec ☐ Stabbing ☐ Toxic Inhal ☐ Venom Bite ☐ Other ☐

CONDITIONS

Allergic Rxn ☐ Asthma ☐ Behavioral ☐ Cardiac Arst ☐ CHF ☐ COPD ☐ CVA ☐ Diabetes ☐ DNR ☐ Environmental ☐ GI Disorder ☐ Med. Illness ☐ MI/Cardiac ☐ OB/GYN ☐ Overdose ☐ Poison ☐ Resp Arst ☐ Seizures ☐ Other ☐

ECG

Nor Sinus ☐ Sinus Tach ☐ A-Fib ☐ SVT ☐ Sinus Brad ☐ Block ☐ Asystole ☐ PEA ☐ PVC'S ☐ Vent Fib ☐ Vent Tach ☐ Other ☐

CIRCULATION

PROV# ☐ IV/1 ☐ IV/2 ☐ E/J ☐ IO ☐

CPR START BY

Citizen ☐ BLS ☐ 1st Resp ☐ ALS ☐

OTHER CARE

CPR Mech ☐ Cntrl Bid ☐ OB Delivery ☐ Other Care ☐ PASG ☐ Restraint ☐ Spinal Imm ☐ Tract/Spint ☐

HOSPITALS

Consulting	Transferring	Receiving
(0) (0) (0)	(0) (0) (0)	(0) (0) (0)
(1) (1) (1)	(1) (1) (1)	(1) (1) (1)
(2) (2) (2)	(2) (2) (2)	(2) (2) (2)
(3) (3) (3)	(3) (3) (3)	(3) (3) (3)
(4) (4) (4)	(4) (4) (4)	(4) (4) (4)
(5) (5) (5)	(5) (5) (5)	(5) (5) (5)
(6) (6) (6)	(6) (6) (6)	(6) (6) (6)
(7) (7) (7)	(7) (7) (7)	(7) (7) (7)
(8) (8) (8)	(8) (8) (8)	(8) (8) (8)
(9) (9) (9)	(9) (9) (9)	(9) (9) (9)

SAFETY EQUIPMENT USED

Safety Seat ☐ Airbag ☐ Helmet ☐ Belt/Harn ☐ None ☐

WITNESSED

Yes ☐ No ☐

TRAUMA ID

Shock ☐ Multi Sys ☐ Severe S Sys ☐ Pen Wnd ☐ Age ☐

MECHANISMS

Deformity ☐ Entrap ☐ Ejection ☐ Fall > 3 X Height ☐

REASON HOSPITAL CHOSEN

Closest ☐ Spec Ref ☐ Rerte-Alert ☐ Rerte-Consult ☐ Inter-facil trnsfr ☐ Patient Choice ☐ Routine Trnsprt ☐ Stroke Care ☐

RADIO

No Attempt ☐ Poor ☐

SPECIAL PURPOSE

Multi Pats Seen ☐ Multi Pats Trans ☐ Hazmat Call ☐ Addit Narr ☐

PROCEDURES

Suction ☐ Orophar ☐ Nasophar ☐ N C ☐ NR Mask ☐ BVM ☐ Mech Vent ☐ CPAP ☐ Hypervent ☐ Other ☐

AED START BY

Citizen ☐ 1st ☐ Resp ☐ BLS ☐ ALS ☐

ROSC at ED

Yes ☐ No ☐

GLUCOSE

Gauge Site: _____

SAO₂ _____ **ET SIZE** _____ **O₂ LPM** _____ **TOTAL cc's** _____

On-line Physician: _____ **Provider Signature:** _____ **EMS Reviewer:** _____

Hospital Signature: _____

MILEAGE: _____

Maryland ISS Data Sets

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- **Vital Records** - Death Certificate and Multiple Cause of Death files

EMS Current



Comprehensive Report

*eMEDS Testing/Demo Site

653 West Pratt Street
Baltimore, MD 21201

Incident Date: 03/11/2014

Call #: TEST140311DEMO01034

Patient Care #: 09914001236

Patient Information		
Name: Doe, John	Age: 15 Years	D.O.B: 07/29/1998 (mm/dd/yyyy)
Address: 161 Arthur Ave Port Deposit, Cecil, MD 21904	Gender: Male Weight: KG / LB	SSN: Race: Ethnicity:
Call Type and Location	Call Disposition	Response Times and Mileage
Call Type: Resp. Mode: Lights and Sirens Urgency: Response: 911 Response Location: Home/Residence Address: 161 Arthur Ave Port Deposit, Cecil, MD 21904	Disposition: Treated, Transported by This Unit Resp. Mode: No Lights or Sirens Destination: Harford Memorial Hospital - 220, 501 S. Union Ave., Havre De Grace, MD 21078 Dest. Determ.: Closest Facility Diverted From: Response Delay: None Scene Delay: None Transport Delay: None TurnAround Delay: None Patient Barriers: None	1st Resp. Arr.: PSAP: 01:14 Incident #: 14003342 Disp. Notified: Unit Disp.: 01:14 Enroute: 01:20 At Scene: 01:27 At Patient: 01:27 Depart: 01:45 Arrive Dest: 02:06 PT Released: 02:06 In Service: 02:23 In Quarters: Cancelled: Start Miles: Scene Miles: To Scene: Dest. Miles: To Dest: End Miles: To End: Call Sign: Not Reporting Veh. #: Ambulance 51 Veh. Type: Ambulance Primary Role: Transport - BLS Care Provided
Unit Personnel		
Crew Member	Crew Member Level	Crew Member Role
Dillard, Justin	Paramedic	Primary Patient Caregiver
CRT Jones, John	CRT (Cardiac Rescue Technician)	
Call Information		
Destination Name: Harford Memorial Hospital - 220 Destination Type: Hospital (or Free-standing ED) Destination Determination: Closest Facility Vehicle Type: Ambulance	Response Request: 911 Response (Scene) Response Disposition: Treated, Transported by This Unit Lights Sirens To Scene: Lights and Sirens Lights Sirens From Scene: No Lights or Sirens	
Factors Affecting Response None		
Patient Condition		
Provider Impression: Respiratory Distress Chief Complaint: Tightness in chest and throat X Minutes Onset Date/Time: Alcohol/Drug Use: Injury Intent: Cause of Injury: Dispatch Reason:		
Primary Symptom Breathing Problem		

Inc. Date: 03/11/2014
Incident #: 14003342

Patient Name: Doe, John
Call #: TEST140311DEMO01034

*eMEDS Testing/Demo Site

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Data Source

eMEDS Runsheets

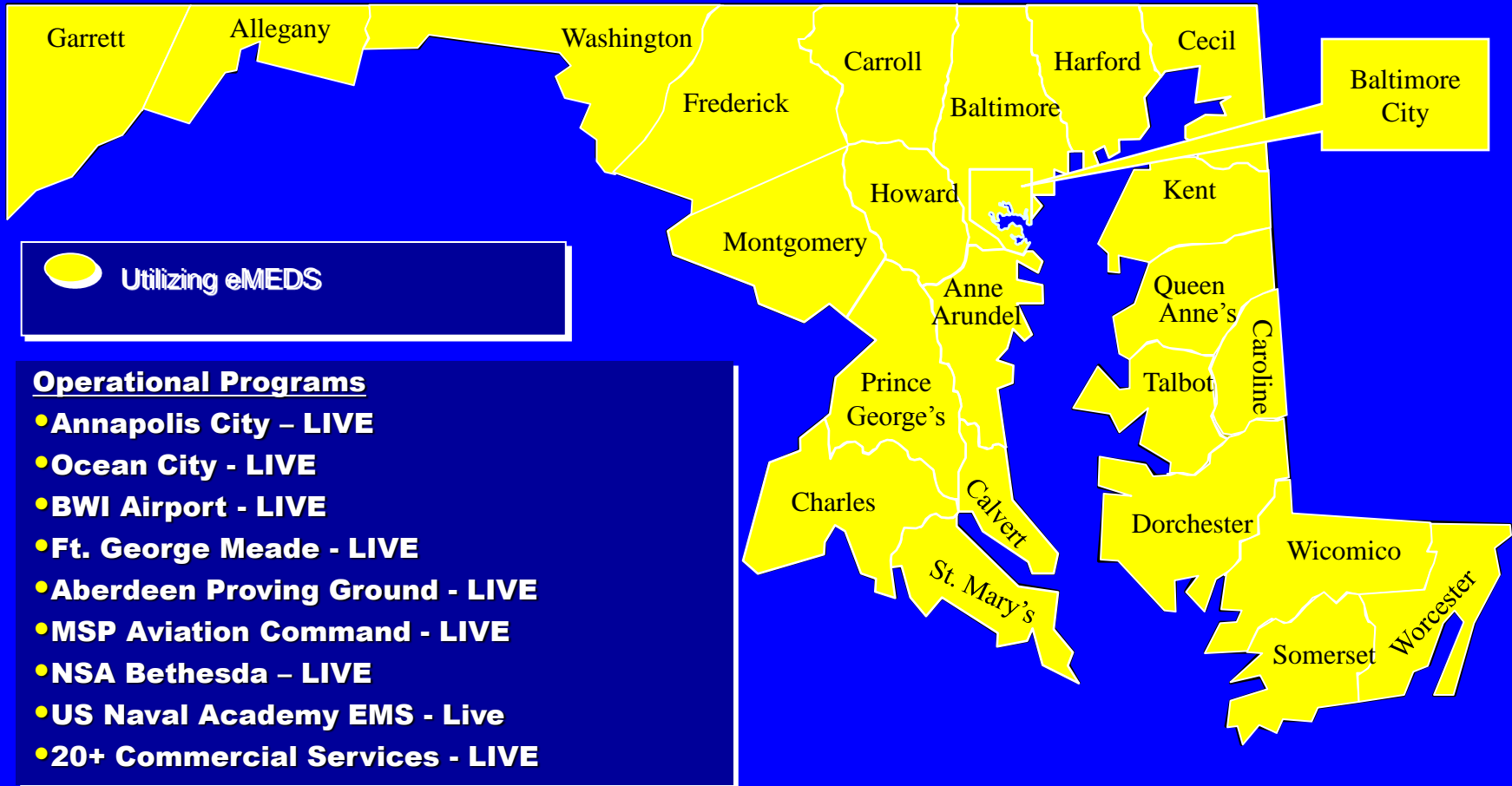
2012-Present

eMEDS Characteristics


- Procured Application thru ImageTrend Inc. (2012)
 - Supported through MHSO/TRCC for RFP
- Meets National EMS Information System (NEMSIS) version 2.2.1 standards
- EMS Unit Based per 911 Call Response (EMS Demand)
- Includes per Patient Encounter Documentation (EMS Response & Outcome)

Existing eMEDS Implementation

Phased-in starting March, 2012



eMEDS Patient Care Record

*eMEDS Testing/Demo Site

DashboardIncidentsModulesStaffSetup

SearchActionsReportsOptionsHistoryAboutMark Run As CompletedeMEDS

SaveStatus: In ProgressLocked: UnlockedPatient:

Dispatch InfoInjury/TraumaCall ConditionsCardiac ArrestSTEMITransportHistoryNarrativeAssessmentBillingVitals/TreatmentAMASignaturesResponse TimesValidation: 70Active Protocols

Cardiac/Trauma

Possible Injury? Yes

Cardiac Arrest?

STEMI Triage Criteria


Unit Delays During Call (Check all That Apply)

1st Responding Agencies and Times

Prior Aid to Patient

Received Care From

eMEDS Patient Care Record

*eMEDS Testing/Demo Site

DashboardIncidentsModulesStaffSetup

SearchActionsReportsOptionsHistoryAboutMark Run As CompletedeMEDS

SaveStatus: In ProgressLocked: UnlockedPatient:

Dispatch InfoInjury/TraumaCall ConditionsCardiac ArrestPatient InfoSTEMITransportHistoryNarrativeAssessmentBillingVitals/TreatmentAMASignatures

Injury

Type of Injury (Mechanism of Injury)

Click here to add...

Cause of Injury

Injury Intent

Patient Safety Equipment Used

Click here to add...

Trauma

Trauma Decision Tree Category

Click here to add...

Trauma Referral Center Notified

Response Times

Validation: 70

Active Protocols

eMEDS Injury Types

Cause of Injury

Aircraft Related
Assault
Bicycle
Bites
Chemical Poisoning
Child Battering
Drowning
Drug Poisoning
Electrocution / Electric Shock (Non-Lightning)
Excessive Cold
Excessive Heat
Explosion
Falls
Fire and Flames
Firearm Assault
Firearm Injury (Unintentional)
Firearm Self Inflicted
Lightning

Machinery

Mechanical Suffocation

Motor Vehicle Non-Traffic

Motor Vehicle - Traffic

Motorcycle (E81X.1)

Non-Motorized Vehicle (E848.0)

Not Applicable

Other Injury

Pedestrian - Traffic

Radiation Exposure

Sexual Assault

Smoke Inhalation

Stabbing/Cutting Unintentional (E986.0)

Stabbing/Cutting Intentional

Struck by Blunt/Thrown Object (E968.2)

Venomous Stings (Plants, Animals)

Water Transport Accident

eMEDS Safety Equipment Used

Patient Safety Equipment Used
<input type="checkbox"/> Protective Safety Belt
<input type="checkbox"/> Child Restraint
<input type="checkbox"/> Eye Protection
<input type="checkbox"/> Helmet Worn
<input type="checkbox"/> Lap Belt
<input type="checkbox"/> No Safety Equipment/Devices Used
<input type="checkbox"/> Other
<input type="checkbox"/> Personal Floatation Device
<input type="checkbox"/> Protective Clothing Gear
<input type="checkbox"/> Protective Non-Clothing Gear
<input type="checkbox"/> Shoulder Belt
<input type="checkbox"/> Not Applicable

Integration vs. Interface Linkage

- **Integration:** *The discrete linking of databases for analytical purposes.*
- **Interface:** *A seamless, on-demand connectivity and high degree of interoperability between systems that supports critical business processes and enhance data quality.*

The Benefits of Integration

- NHTSA “6 Pack” performance measures
 - Timeliness (How soon are records available)
 - Accuracy (Percentage of records with no errors)
 - Completeness (Percentage of records with missing critical elements)
 - Uniformity (NEMSIS compliant)
 - **Integration** (Percentage of records linked to other datasets)
 - Accessibility (Demonstration of shared access)
- EMS – Knowledge of injury severity and triage thought process at the scene.
- MTR – Knowledge of conditions (BAC) and outcomes (z/w scores)

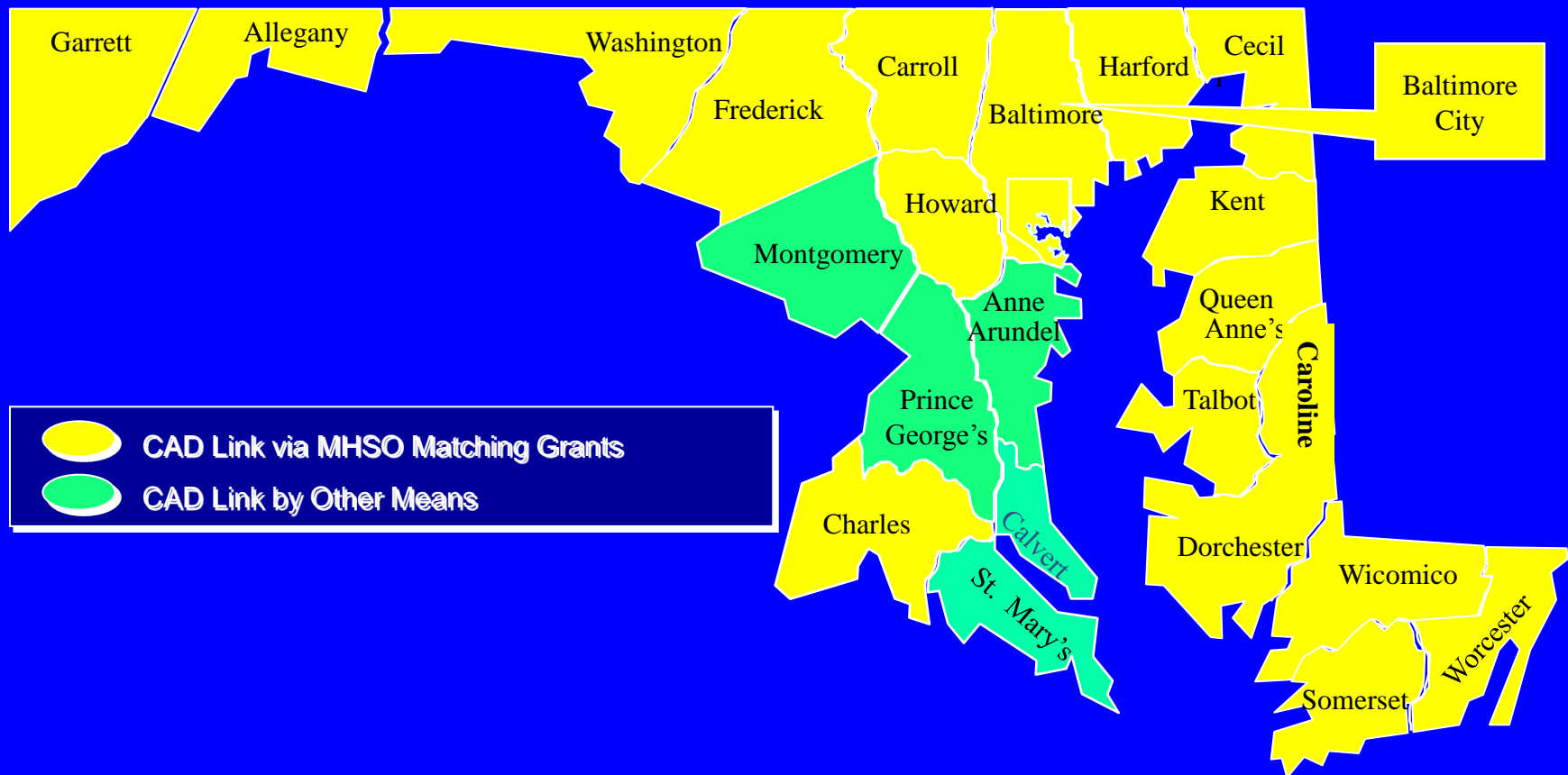
eMEDS Integration Capabilities

- Crash Outcomes Data Evaluation System
(CODES)
- In-Patient/Out-Patient Hospital Discharges
(HSCRC)
 - Linked spinal cord injuries MTR – unlinked case pointed out higher rate of false positives than first thought.
- Fatal Accident Reporting System
(FARS)
 - Meet reporting requirements established by NHTSA

eMEDS Interface Capabilities

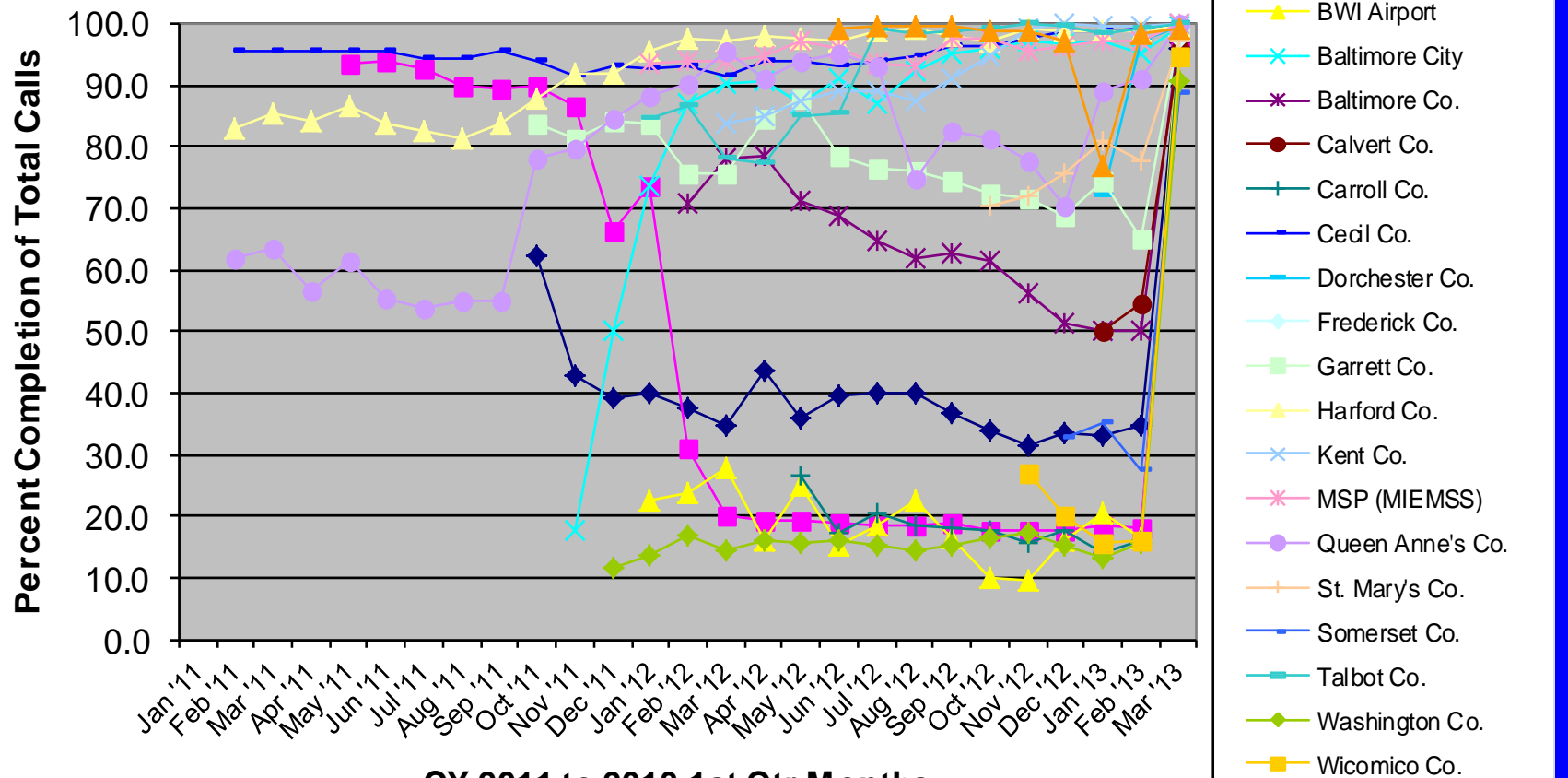
- Computer Aided Dispatch (CAD)
- Hospital Dashboard (ePCR exchange)
 - Initial transport record link (JHH Pediatrics)
 - Non-Transport record(s) link (STEMI)
- MTR – eMEDS record retrieval
- Advance Automatic Crash Notification (AACN) - Pilot
- Cardiac Arrest Registry to Enhance Survival (CARES) - Pilot
- Health Information Exchange – Grant Application

eMEDS - CAD Interface Linkage



911 Call Time Performance Measurement

eMEDS EMSOPS 911 Time Completion Percent



CY 2011 to 2013 1st Qtr Months

eMEDS and Maryland HIE

- Push eMEDS records through CRISP
- Meet the hospital standard for data transfer (HL7)
- Utilize master patient index algorithm to link
- Hospital Benefit – Potential
 - Move data directly into hospital registry systems
 - Have all EMS encounters as part of the patient EMR
- EMS Benefit – Potential
 - Knowledge/tracking of expose incidents
 - Linkage to hospital medical records through primary key
 - Answer: Does what we do make a difference?